Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Please cancel claims 25-31, 33-46, and 60-70 as follows:

1. (previously presented) A method of coating a substrate with a cathode material for an electrochemical cell, the method comprising

providing a substrate selected from the group consisting of a paper substrate, a metallic foil substrate, a release liner, a metal coated paper, and a metal coated polymer,

coating edge material onto the substrate to contact a surface of the substrate, and

coating cathode material onto the substrate to contact a surface of the substrate,

wherein the cathode material and the edge material contact each other, and

wherein the thickness profile at the edge of the coated cathode material is improved relative to a thickness profile of an edge of a cathode material coated without the edge material.

2. (original) The method of claim 1 wherein the coated cathode material comprises a tapered edge, and edge material is coated to at least partially cover the tapered edge to produce a desired dry thickness profile at the tapered cathode material edge based on the combined dry thickness of cathode material and edge material.

3. (original) The method of claim 2 wherein a bulk portion of cathode material is coated to a desired dry thickness, and the thickness profile at the cathode material edge comprises a substantially uniform dry thickness that approximates the desired dry thickness of the cathode material to within 10 percent.

4. (original) The method of claim 1 comprising coating the cathode material and the edge material onto the substrate using a die coater having a first slot for coating cathode material and a second slot for coating edge material in contact with an edge of the cathode material.

5. (original) The method of claim 1 wherein edge material acts as a physical boundary against which cathode material forms an edge.

6. (original) The method of claim 5 wherein the edge material and the cathode material maintain a separation after being coated onto the substrate.

7. (original) The method of claim 5 wherein the edge material and the cathode material are immiscible.

8. (original) The method of claim 5 wherein the physical boundary of edge material alters the shape of the edge of the cathode material relative to the shape of a cathode material edge of a cathode material coated absent edge material.

9. (original) The method of claim 5 wherein

a bulk portion of cathode material is coated to a dry thickness in the range from about 3 to about 100 microns, and

a width of the edge of the coated cathode material is in the range from about 0.1 to about 3 mm.

10. (original) The method of claim 5 comprising coating cathode material and edge material onto a substrate using a die coater having a first slot for coating cathode material and a second slot for coating edge material, wherein shims are arranged in each slot to cause a stripe of edge material to be coated adjacent to a stripe of cathode material, on a moving substrate.

11. (original) The method of claim 10 wherein the first slot and the second slot are substantially parallel and are separated by a distance of less than about 5 millimeters.

12. (original) The method of claim 11 wherein the edge material and the cathode material are coated onto a substrate moving past the slots at a rate in the range from about 3 to 1000 feet per minute.

13. (original) The method of claim 5 wherein the edge material and cathode material are coated nearly simultaneously.

14. (original) The method of claim 5 wherein an edge of the cathode material and an edge of the edge material come into contact with each other before the edges of the materials contact the substrate.

15. (original) The method of claim 14 comprising nearly simultaneously coating the cathode material and edge material onto a substrate using a single die coater with multiple orifices.

16. (original) The method of claim 5 wherein the cathode material edge is approximately square, having a uniform thickness profile, and a width of less than a millimeter.

17. (original) The method of claim 1 comprising extrusion coating a cathode material onto a substrate, calendering the cathode material, and extrusion coating an electrically insulating edge material in contact with an edge of the calendered cathode material.

18. (original) The method of claim 17 wherein the electrically insulating edge material is coated using a hot melt extrusion process.

19. (original) The method of claim 17 wherein the electrically insulating polymer is chosen from the group consisting of a polyurethane, a polycarbonate, a polyolefin, a polyvinylether, an isocyanate, a polypropylene, a polyethylene , a polyacrylate, and combinations thereof.

20. (original) The method of claim 1 wherein the cathode material comprises an electrode active material, an electrically conductive material, an ionically conducting polymer, and an electrolyte salt.

21. (original) The method of claim 1 wherein the coating material is extrusion coated onto the substrate.

22. (original) The method of claim 1 wherein the edge material is extrusion coated onto the substrate.

23. (original) The method of claim 1 wherein the coating material is solvent coated onto the substrate.

24. (original) The method of claim 1 wherein the edge material is solvent coated onto the substrate.

25-46. (canceled)

47. (previously presented)A method of coating a substrate with a cathode material for an electrochemical cell, the method comprising

providing a substrate,

coating a cathode material onto the substrate to contact a surface of the substrate, and

coating an insulating edge material onto the substrate to contact a surface of the substrate, the edge material also being a barrier material,

coating a separator layer comprising solid polymer electrolyte, in contact with the cathode material,

wherein the cathode material and the edge material contact each other.

48. (original) The method of claim 47 wherein the cathode material is extrusion coated.

49. (original) The method of claim 47 wherein the edge material is extrusion coated.

50. (original) The method of claim 47 wherein the wet coating thickness of the edge material is approximately equal to the wet coating thickness of the cathode material.

51. (previously presented) The method of claim 47 wherein the dry coating thickness of the edge material is approximately equal to the dry coating thickness of the cathode material.

52-56. (cancelled)

57. (previously presented) The method of claim 1 wherein the substrate is selected from the group consisting of a metallic foil and a release liner.

58. (previously presented) The method of claim 1 wherein the substrate is selected from the group consisting of aluminum foil, copper foil, and a silicone release liner.

59. (previously presented) A method of coating a substrate with a cathode material for an electrochemical cell, the method comprising

providing a substrate,

coating edge material onto the substrate, and

coating cathode material onto the substrate,

wherein the coating material and the edge material contact each other,

wherein the thickness profile at the edge of the coated cathode material is improved relative to a thickness profile of an edge of a cathode material coated without the edge material,

wherein edge material acts as a physical boundary against which cathode material forms an edge, and

wherein the edge material and the cathode material maintain a separation after being coated onto the substrate.

60-70. (cancelled)